The Transmission of Federal Credit Through Financial Intermediaries: Evidence from CDFIs*

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Abstract

To understand how federal credit transmits through intermediaries, we study the Community Development Financial Institution (CDFI) program, which channels support through institution-level certification and competitive capital awards. The setting provides a useful laboratory because both commercial banks and credit unions participate. We show that certification and award allocation differ systematically across organizational forms and are closely linked to balance sheet conditions among credit unions. Following certification and award receipt, credit unions expand lending and diversify funding. These patterns are consistent with credit unions facing binding financial constraints, reflecting their limited ability to raise external capital relative to banks. Consistent with this mechanism, certification timing also responds to anticipated local investment demand during the 2017 Opportunity Zone nomination phase. Our findings demonstrate that institutional form is central to the transmission of federal credit programs that operate indirectly through lenders.

Keywords: Federal Credit Programs; Financial Intermediation; Institutional Form; Financial Constraints

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1 Introduction

Federal credit programs have long been a central instrument of U.S. economic policy. From loan guarantees and tax-credit allocations to direct grants and capital injections, the federal government routinely intervenes in credit markets to expand access to capital and promote economic development. Early theoretical work emphasizes that such interventions can relax financing constraints and improve allocation in the presence of market imperfections, but may also crowd out private lending or generate distortions depending on how they are structured (Gale, 1990, 1991). A central implication of this framework is that the economic effects of federal credit depend critically on design: whether support is directed at specific loans, distressed institutions, or the balance sheet capacity of intermediaries more broadly.

While crisis-era recapitalizations such as TARP and pandemic-era programs such as PPP have been studied extensively, far less is known about how capacity-based federal credit directed at lenders transmits through intermediary balance sheets in normal times. Unlike loan-level guarantees or emergency stabilization programs, capacity-based policies expand the funding access and risk-bearing ability of selected intermediaries without tying support to particular transactions. In this setting, transmission depends on which institutions choose to participate, how public capital is allocated among them, and how balance sheets reoptimize once expanded capacity becomes available.

This paper studies the Community Development Financial Institutions (CDFI) Fund as a laboratory for understanding this design of federal credit policy. The CDFI program certifies mission-oriented intermediaries and allocates grants and equity-like capital intended to support lending in underserved communities. Certification establishes eligibility for federal support, while awards represent realized transfers of federal resources. We study certification and award receipt as expansions in intermediary funding access and balance sheet capacity, rather than as subsidies tied to specific loans or crisis-induced recapitalizations. This structure allows us to examine institutional selection into expanded capacity, allocation of public capital across intermediaries, and subsequent balance sheet adjustments within a consistent regulatory framework.

A central theme of our analysis is that intermediary-targeted federal credit does not operate uniformly across institutional forms. Credit unions and commercial banks differ in

governance structure, funding models, capital constraints, and objective functions. These structural differences shape how institutions allocate capital, manage liquidity, and respond to changes in funding conditions. We show that these distinctions are critical for understanding participation in and transmission of capacity-based federal support: identical funding mechanisms generate markedly different balance sheet responses across intermediary types. The effectiveness of intermediary-targeted federal credit therefore depends not only on local demand conditions, but also on the institutional environment through which public capital is deployed.

We construct a novel panel dataset linking CDFI certification and award records to regulatory financial statements for U.S. depository institutions from 2011 through 2024. We focus on banks and credit unions, which operate as conventional intermediaries both before and after certification, allowing us to observe pre-certification characteristics and post-award balance sheet dynamics within a consistent regulatory framework. This structure enables us to analyze three margins of transmission: entry into the program through certification, allocation of federal resources through awards, and subsequent balance sheet adjustment.

Our analysis delivers three central findings. First, participation in the CDFI program reflects persistent institutional heterogeneity rather than short-run balance sheet stress. Among credit unions, certification is strongly associated with higher leverage, lower liquidity buffers, and stronger profitability, consistent with constrained but opportunity-rich institutions seeking expanded funding capacity. Among banks, certification is far less systematically related to balance sheet characteristics and is instead more closely associated with minority depository institution (MDI) status and mission orientation. Conditional on certification, profitability robustly predicts award receipt among credit unions, whereas observable financial characteristics play a more limited role among banks. Entry into and allocation within intermediary-targeted federal credit are therefore shaped by structural differences across institutional types.

Second, federal awards are associated with economically meaningful balance sheet reoptimization for credit unions but not for banks. After absorbing institution fixed effects and county-year shocks, award receipt among credit unions coincides with higher loan growth, asset expansion, liquidity accumulation, funding diversification, and portfolio reallocation toward consumer lending. Net interest margins decline modestly while return on assets in-

creases, consistent with scale expansion and funding reoptimization rather than yield-seeking behavior. These adjustments indicate that awards relax internal capacity constraints and enable mission-aligned scaling. In contrast, once local conditions and institution fixed effects are absorbed, banks exhibit far more muted and statistically imprecise balance sheet responses around certification and award receipt. Transmission through intermediary balance sheets is therefore highly asymmetric across organizational forms.

Third, certification timing responds to anticipated place-based investment demand. Exploiting the introduction of the Opportunity Zone (OZ) program in 2017, which created capital gains tax incentives for investment in designated low-income census tracts, we examine whether institutions adjust certification decisions in anticipation of expected capital inflows. The nomination process unfolded under substantial uncertainty, generating a transition period during which local financial institutions could plausibly anticipate future investment demand without certainty over final designation. Among credit unions, greater exposure to OZ-designated areas predicts a significantly higher likelihood of certification in 2017, the transition year. We find no comparable response among banks, and little evidence of elevated certification after designations were finalized. Entry into a capacity-based federal program can therefore be forward-looking and driven by expectations rather than contemporaneous distress.

Taken together, these findings identify the economic conditions under which intermediary-targeted federal credit expands lending capacity. Capacity-based support binds most strongly for constrained intermediaries, induces systematic reoptimization of assets and liabilities rather than purely proportional scaling, and can generate anticipatory entry when local demand is expected to increase. At the same time, forward-looking entry does not necessarily translate into sustained expansion when expected demand fails to materialize.

Our paper contributes to the literature on federal credit programs and the transmission of public capital through financial intermediaries. Prior work evaluates loan-level interventions such as Small Business Administration guarantees and directed credit programs and documents their effects on firm outcomes and credit supply (e.g., Brown and Earle, 2017; Bach, Kim, and Yannelis, 2021). In contrast, we study an intermediary-level program in which certification and capital awards alter the balance sheet capacity of mission-driven institutions. By tracing certification timing, award allocation, and subsequent balance sheet

adjustments, we provide evidence on how federal support operates through regulated intermediaries rather than directly through individual loans.

Second, we contribute to the literature on how institutional form shapes risk-taking and lending behavior in financial intermediation. A large literature emphasizes that capital structure and organizational constraints affect portfolio decisions and credit supply (e.g., Berger and Bouwman, 2009; DeYoung, Gron, and Torna, 2015). Related work shows that governance and mission orientation influence lending patterns across nonprofit and minority-owned intermediaries. For example, minority-owned banks expand credit access to underserved communities and minority borrowers (Berger, Feldman, Langford, and Roman, 2024; Hurtado and Sakong, 2023; Vatsa, 2025), while credit unions exhibit distinct consumer finance and lending outcomes reflecting their member-owned structure (e.g., Cororaton, 2019; Shahidinejad, 2025; Li and van Rijn, 2022). We complement this literature by examining how federal certification and award eligibility interact with institutional form. In particular, we document heterogeneous certification and balance sheet responses across credit unions and banks and show that Minority Depository Institutions are significantly more likely to become certified and expand in minority communities, highlighting how organizational structure mediates the transmission of federal credit.

Finally, we contribute to the limited academic literature evaluating the CDFI program. Cortés and Lerner (2013) document that CDFI Fund awards increase lending and risk-taking among recipient credit unions, and Kovner and Lerner (2015) study related mission-oriented intermediaries in equity markets. We extend this literature by providing a comprehensive sector-level analysis spanning certification dynamics, award allocation, geographic expansion, and loan pricing relative to alternative federal programs. Rather than focusing on a single award program or institutional type, we study both depository institutions and loan funds and document how federal support reshapes intermediary balance sheets and local credit markets.

The remainder of the paper proceeds as follows. Section 2 describes the institutional structure of the CDFI program and the data. Section 3 examines certification decisions and the allocation of federal awards. Section 4 analyzes balance sheet transmission following certification and award receipt. Section 5 studies certification timing in response to Opportunity Zone exposure. Section 6 concludes.

2 Institutional Background and Data

This section describes the institutional structure of the CDFI program and the data used to study the transmission of federal credit through financial intermediaries. We first explain how certification establishes eligibility for federal support and how award programs allocate federal resources to certified institutions. We then describe the data sources used to construct our institution-level panel dataset.

2.1 The CDFI Program

The Community Development Financial Institutions (CDFI) program was established in 1994 as part of the Community Development and Regulatory Improvement Act. Congress created the CDFI Fund within the U.S. Department of the Treasury to expand access to credit and financial services in low-income and historically underserved communities. Rather than lending directly to firms or households, the federal government supports mission-driven financial intermediaries that in turn provide financing to their target markets. Since its inception, the program has become a central federal channel for community development finance in the United States.

At its core, the CDFI Fund combines certification with access to financial and technical support. Certification is a prerequisite for participation in most programs and establishes eligibility for federal resources. To obtain certification, an organization must (i) be a financing entity, (ii) serve a defined target market composed predominantly of low-income or otherwise disadvantaged populations, (iii) provide development services in conjunction with its financial products, and (iv) maintain accountability to its target market. Certification therefore functions both as a screening mechanism and as a formal designation of mission alignment.

A range of organizational forms can become certified CDFIs, including regulated depository institutions such as community banks and credit unions, as well as non-regulated entities such as loan funds and venture capital funds. Loan funds comprise a large share of certified institutions by count. However, they account for a much smaller share of aggregate activity. The 2019 CDFI Annual Certification and Data Collection Report indicates that

loan funds represent 50.6 percent of certified CDFIs but only 11.1 percent of total CDFI investments.[1]

Certification enables institutions to apply for financial support through several award programs administered by the CDFI Fund. These include the CDFI Financial Assistance (CDFI-FA) program, which provides grants and equity-like capital, and the New Markets Tax Credit (NMTC) program, which allocates tax credits to support investment in low-income communities. In addition to financial awards, the CDFI Fund provides technical assistance and capacity-building support. Although our empirical analysis focuses on financial awards, these complementary forms of support may also affect intermediary capacity.

Although award programs differ in structure, both mechanisms channel federal resources through certified intermediaries rather than directly to borrowers. Awards can expand capital capacity, support loan loss reserves, and facilitate access to external financing. In this sense, they operate as balance sheet interventions that modify intermediaries' funding capacity and risk-bearing ability. A detailed description of award programs and their evolution over time is provided in Appendix B.

The CDFI Fund is therefore best understood as an indirect federal credit program. Rather than allocating credit directly, the government reallocates credit capacity within the financial system by altering the balance sheet resources and funding access of certified intermediaries. This institutional evolution occurred against a backdrop of post-crisis retrenchment in small business lending by large banks, which generated persistent local credit supply disruptions in affected counties (Chen, Hanson, and Stein, 2017). Recent Federal Reserve analyses document rapid growth in the scale of certified CDFIs and emphasize heterogeneity across depository institutions and loan funds in capital structure and funding models (Scott, Recto, and Kivell, 2023; Sanchez-Moyano and Simms, 2023; De Zeeuw and Motta, 2021). Complementary survey evidence indicates that CDFIs view federal programs as central to underwriting flexibility and mission delivery, and report sustained growth in demand for their products in underserved markets (Federal Reserve Bank of Richmond, 2025). At the same time, the program's expansion has prompted policy discussion regarding fiscal cost, overlap with other federal credit channels, and overall effectiveness (Michel and

[1] https://www.cdfifund.gov/sites/cdfi/files/2021-01/ACR-Public-Report-Final-10292020-508Compliant.pdf

Famularo, 2025). The program's ultimate impact depends on how certified intermediaries transmit federal support into lending and financial activity.

2.2 Data and Sample Construction

To examine how federal credit transmits through intermediaries, we construct a panel dataset linking CDFI certification and award records to regulatory financial statements for U.S. depository institutions. We next describe the data sources used to construct this panel.

First, we gather historical lists of certified CDFIs through June 2025 to identify certification status and the year in which each institution became certified. We manually review names and locations to assign RSSD identifiers when available. RSSD IDs are unique identifiers assigned by the Federal Reserve to banks and credit unions, which allows us to link certification records to regulatory filings.

Second, we obtain the full database of CDFI Fund awards.[2] For each award, the database reports the awardee name, location, year of award, dollar amount, and program type. We link awards to certified institutions using name and location information.

Third, we collect regulatory financial data for depository institutions. For commercial banks, we use FFIEC Call Reports. For credit unions, we use data from the National Credit Union Administration (NCUA). Appendix A details the construction of balance sheet and performance variables used in the analysis. Our baseline sample includes institutions headquartered in the 50 U.S. states and the District of Columbia. We restrict the bank sample to institutions that never exceeded $10 billion in assets during the sample period, reflecting the size distribution of certified banks and ensuring a relevant comparison set of potential participants.

We classify depository institutions as Minority Depository Institutions (MDIs) using regulator-defined criteria. For banks, we rely on annual lists published by the Federal Deposit Insurance Corporation (FDIC).[3] For credit unions, we use minority designation indicators reported in NCUA call report data. An institution is classified as an MDI in a given period if it satisfies the relevant regulatory definition.

Together, these data allow us to track certification timing, award receipt, and detailed

[2] https://www.cdfifund.gov/awards

[3] https://www.fdic.gov/minority-depository-institutions-program/minority-depository-institutions-list

balance sheet dynamics for depository institutions over the period 2011 to 2024. In the next section, we examine which institutions access the federal credit channel and how certification and award receipt are allocated across potential participants.

3 Entry and Allocation in the CDFI Program

We next examine which institutions access the CDFI program and how federal support is allocated among certified participants. Certification constitutes entry into the program and establishes eligibility for federal support, while financial awards represent the allocation of resources among certified institutions. Understanding these two margins is essential for interpreting subsequent balance sheet adjustments.

Our analysis focuses on regulated depository institutions, namely commercial banks and credit unions. Depositories operate as conventional financial intermediaries both before and after certification, allowing us to observe pre-certification characteristics and post-certification balance sheet dynamics using consistent regulatory data. This structure provides a suitable setting for studying entry into the program and the transmission of intermediary-targeted federal support.

Although non-depository loan funds account for a substantial share of certified institutions by count, many are formed specifically to operate as CDFIs and therefore lack a meaningful pre-certification operating history as conventional intermediaries. In contrast, depository institutions exist independently of certification status, making them well suited for analyzing both selection into the program and subsequent balance sheet adjustments. We therefore center our analysis on banks and credit unions.

We proceed in three steps. First, we document descriptive trends in the growth of depository CDFIs since 2011. Second, we examine institutional characteristics associated with certification. Third, we analyze which certified institutions receive financial awards. Together, these analyses characterize entry into and allocation within the CDFI program and provide the foundation for the transmission analysis that follows.

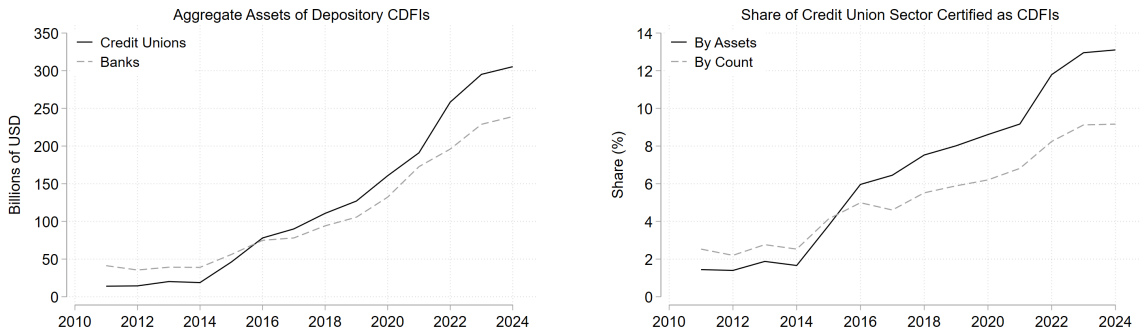


Figure 1. Growth of Depository CDFIs
The left panel reports aggregate assets (in billions of U.S. dollars) of certified depository CDFIs, separated by banks and credit unions. The right panel reports the share of all credit union assets and counts accounted for by certified credit union CDFIs. See Section 2.2 for data sources.

3.1 Depository CDFIs in Aggregate

Figure 1 summarizes the growth of depository CDFIs. The left panel shows a substantial increase in the aggregate asset base of certified depository institutions over the sample period. By 2024, depository CDFIs held more than $500 billion in assets, with credit unions accounting for roughly $300 billion and banks over $200 billion. Growth reflects both increases in the number of certified institutions and expansion in average institution size, particularly among credit unions (Scott et al., 2023). Between 2011 and 2024, the number of certified depository CDFIs increased from 348 to 872, indicating expansion along the extensive margin as well (Appendix Figure C.1).

The right panel places this growth in sectoral context. By the end of the sample, certified credit union CDFIs accounted for approximately 12 percent of total credit union assets and 8 percent of credit union counts. These patterns indicate that CDFI certification represents a meaningful presence within the depository sector, especially among credit unions.

A broader analysis of geographic expansion across counties, including loan fund activity and county-level determinants of entry, is provided in Appendix D.

3.2 Analysis Sample and Descriptive Statistics

Before proceeding further, we define the analysis sample used in the institution-level summary statistics and regression analyses that follow. We restrict attention to institutions headquartered in the 50 U.S. states and the District of Columbia, excluding U.S. territories. We further limit the bank sample to institutions that never exceeded $10 billion in assets during the sample period. Although there is no formal size limit for depository CDFIs, in practice all certified banks in our data fall below this threshold. Restricting the sample in this way allows us to focus on a relevant comparison set of potentially eligible depository institutions.

Because net interest margin (NIM) is a key variable in our institution-level analyses, we require that NIM be defined over each institution's observed time series. Institutions with missing NIM observations in the interior of their time series are excluded from the analysis sample. If an institution first appears partway through the sample period and NIM is missing only in its initial observation, we drop that observation but retain the institution thereafter. These restrictions ensure a consistent panel for analyzing balance sheet dynamics while retaining institutions with otherwise complete reporting histories.

Table 1 reports institution-level averages for credit unions and banks in the analysis sample, separately by CDFI certification status. Each variable is first averaged over time within an institution and then averaged across institutions within each group. These summary statistics provide a first look at the institutional characteristics associated with certification. Credit unions have much higher rates of certification within their group, which is consistent with their nonprofit, member-owned structure and community focus (Cororaton, 2019).

In general, CDFIs are quite small on average, with assets far less than $1 billion. Within institution type, certified credit unions are larger on average than non-certified credit unions, while certified banks tend to be smaller than non-certified banks. To provide additional context on the size distribution underlying these averages, Appendix Figure C.2 plots the distribution of average assets by institution type and certification status.

Certified institutions also display distinct balance sheet characteristics relative to their non-certified peers. Across both credit unions and banks, certified institutions tend to have

Table 1. Institution-Level Averages

This table shows institution-level averages for credit unions and non-large banks according to their CDFI status. Each variable is first averaged across time within a given institution and then these values are averaged over the institutions within each group. An institution is considered within the CDFI category if it was ever certified during our sample period. The underlying annual data cover the period 2011 through 2024. The analysis sample is defined in Section 3.2. See Section 2.2 for data sources and Appendix A for variable details.

	Credit Unions		Banks	
	CDFI	Non-CDFI	CDFI	Non-CDFI
Assets, Millions of USD	330.4	210.4	364.1	473.0
Loans / Assets, %	61.8	50.9	62.9	61.4
RE Loans / Total Loans, %	27.1	23.0	72.1	70.0
Consumer Loans / Total Loans, %	65.4	72.3	5.8	5.2
C&I Loans / Total Loans, %	0.7	0.4	13.3	12.7
Cash / Assets, %	13.1	14.3	9.5	10.7
Securities / Assets, %	5.1	5.7	20.7	21.4
Liabilities / Assets, %	89.2	86.7	89.3	88.3
Net Interest Margin (NIM), %	2.7	2.5	3.7	3.4
Return on Assets (ROA), %	0.6	0.2	0.9	0.8
Cost of Debt, %	0.6	0.5	0.8	0.7
Is Minority Depository Insitution, %	31.9	11.3	22.2	2.5
N	659	6,593	252	6,971

higher leverage and lower cash-to-assets ratios. In addition, certified institutions are substantially more likely to be minority depository institutions (MDIs).[4] Among banks, approximately 20 percent of certified institutions are MDIs compared with roughly 2 percent of non-certified banks. Among credit unions, the corresponding figures are approximately 30 percent and 10 percent. These differences align with the mission orientation emphasized in Section 2.1.

The cross-sectional patterns documented above motivate a more formal analysis of the characteristics associated with certification timing.

[4]Throughout our analysis, we construct an MDI indicator equal to one if an institution is classified as an MDI at any point during the sample period.

3.3 Predicting Certification

To formally study the decision to certify, we estimate

$$\text{CDFI Certification}_{i,c,t+1} = \beta' X_{i,t} + \nu^{(k)} + \epsilon_{i,c,t}, \tag{1}$$

where the dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$. $X_{i,t}$ is a vector of time-varying institution-level control variables and $\nu^{(k)}$ denotes alternative fixed effect structures, including county-year fixed effects, county and year fixed effects, and institution fixed effects, as indicated in the table. The estimation sample includes institution-year observations in which the institution is not certified in year t. This stacked panel structure allows institutions to contribute multiple observations prior to certification.[5]

Because certification is measured between year t and $t+1$, the final year of outcomes corresponds to certifications occurring in 2023, with 2022 as the last year contributing right-hand-side covariates. We restrict the estimation sample to this period because there are effectively no new depository institution certifications observed in 2024, reflecting a transition in the CDFI Fund's certification process during that period. Nonetheless, results are unchanged if the sample is extended through 2024.

We interpret this regression as describing how observed institution characteristics and local conditions are associated with the timing of CDFI certification.

We present a sequence of specifications with increasingly rich fixed effects to illustrate how selection into certification varies across institutions, locations, and over time. Table 2 presents separate results for credit unions and banks. Three findings emerge. First, MDIs are significantly more likely to certify in both samples, indicating that mission alignment plays an important role in CDFI participation. This result is consistent with the higher average incidence of MDIs among CDFIs shown in Table 1.

Second, among credit unions, certification is strongly associated with balance sheet characteristics indicative of tighter financial constraints. Credit unions with higher leverage,

[5] In practice, CDFI certification is highly persistent in the data, though a small number of institutions appear to transition out of certified status in later years. Our specification conditions only on certification status in year t, rather than imposing permanent exit after first certification.

Table 2. Predicting CDFI Certification

This table shows the coefficient estimates from estimating specification (1). The dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$. The underlying annual data cover the period 2011 through 2023, which corresponds to the final year with observed new depository institution certifications. The analysis sample is defined in Section 3.2. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, , and *** denote significance at the 10, 5, and 1 percent levels.

	Credit Unions				Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Is MDI	0.010***	0.009***			0.007***	0.009***		
	(0.001)	(0.002)			(0.002)	(0.003)		
Cash/Assets	-0.009***	-0.009***	-0.010**	-0.006	-0.001	-0.001	-0.007	-0.005
	(0.003)	(0.003)	(0.005)	(0.006)	(0.002)	(0.002)	(0.004)	(0.004)
Liabilities/Assets	0.047***	0.043***	0.011	-0.007	0.012***	0.004	0.023*	0.018
	(0.004)	(0.005)	(0.017)	(0.020)	(0.002)	(0.003)	(0.014)	(0.017)
ROA	0.254***	0.153***	0.043	-0.011	0.042*	-0.017	-0.034	0.057
	(0.043)	(0.048)	(0.059)	(0.066)	(0.023)	(0.030)	(0.038)	(0.047)
County-Year FE	No	Yes	No	Yes	No	Yes	No	Yes
County FE	No	No	Yes	No	No	No	Yes	No
Year FE	No	No	Yes	No	No	No	Yes	No
Institution FE	No	No	Yes	Yes	No	No	Yes	Yes
R^2	0.003	0.191	0.163	0.326	0.001	0.416	0.183	0.537
N	67,579	60,887	67,267	60,578	66,125	55,425	65,825	55,086

lower cash holdings, and stronger profitability are significantly more likely to become certified. Taken together, these patterns suggest that certification is most attractive to credit unions that face binding funding constraints but also have profitable lending opportunities, consistent with certification being particularly valuable for institutions with limited internal funding capacity.

Third, these balance sheet characteristics do not predict certification among banks. Instead, bank certification appears less sensitive to internal financial conditions, suggesting that banks' decisions to certify are driven more by institutional mission or local credit needs than by balance sheet constraints. This contrast highlights an important difference in how CDFI certification operates across organizational forms and is consistent with credit unions being more financially constrained than community banks.

To assess whether short-run within-institution changes predict certification timing, we also estimate highly saturated specifications that include both institution fixed effects and county-year fixed effects. In these specifications, the estimated relationships attenuate.

This pattern reflects the fact that CDFI certification is a relatively infrequent and persistent institutional decision driven primarily by slow-moving characteristics rather than sharp within-institution changes in the period immediately preceding certification. When both time-invariant institutional heterogeneity and local time-varying conditions are absorbed, there is limited residual variation left to predict the precise timing of certification. Importantly, the absence of significant within-institution effects indicates that credit unions do not systematically adjust their balance sheets in advance of certification; instead, institutions that certify tend to differ persistently from those that do not.

Taken together, the results in Table 2 indicate that selection into CDFI certification reflects persistent institutional characteristics rather than short-run balance sheet adjustments. Among credit unions, certification is more likely for institutions with higher leverage, lower liquidity buffers, and stronger profitability. This combination is consistent with certification being particularly attractive to institutions with valuable lending opportunities but limited internal funding capacity.

In contrast, certification among banks is less systematically related to balance sheet characteristics. Instead, MDI status is a strong predictor, indicating that institutional mission and community orientation play a central role in bank participation. These differences highlight important organizational heterogeneity in how the CDFI program operates across depository institutions.

3.4 Predicting Award Receipt Given CDFI Certification

We next examine the determinants of CDFI Fund award receipt conditional on certification. Conditioning on certification isolates the allocation of federal resources among eligible institutions and abstracts from the initial decision to enter the program. This distinction allows us to separate the extensive margin of participation from the intensive margin of resource allocation.

Specifically, we estimate the following specification:

$$\text{CDFI Award}_{i,c,t+1} = \beta' X_{i,t} + \nu^{(k)} + \epsilon_{i,c,t}, \tag{2}$$

where the dependent variable equals one if institution i receives at least one CDFI Fund

award within the first three years following certification. The sample is restricted to institutions that are already CDFI-certified. This definition mirrors the award indicator used in Appendix C.3 and allows for lags between certification and award receipt. As shown in Appendix Figure B.4, more than 80 percent of certified CDFIs that ever receive an award do so either in the certification year or within the subsequent two years, motivating the three-year window. The vector $X_{i,t}$ includes time-varying institution-level characteristics, and $\nu^{(k)}$ denotes alternative fixed effect structures, including specifications with and without fixed effects for the year of certification. Standard errors are clustered at the institution level.

This approach focuses on year-to-year award receipt among certified institutions and therefore separates award allocation from the initial certification decision. While award receipt still reflects both application choices and CDFI Fund selection, conditioning on certification removes the extensive-margin decision to enter the program and focuses attention on the intensive margin of award allocation.

Table 3 reports the results separately for credit unions and banks. Among credit unions, award receipt is strongly and robustly related to profitability, as measured by return on assets. This relationship holds when controlling for the year of certification, indicating that more profitable certified credit unions are more likely to receive awards even within the same certification cohort. Leverage is positively related to award receipt in specifications without certification-year fixed effects, while cash holdings and MDI status do not robustly predict award outcomes.

For banks, award receipt is more weakly related to balance sheet characteristics, and no variable consistently predicts award allocation once certification-year fixed effects are included. In particular, MDI status does not explain award receipt conditional on certification.

Among credit unions, however, profitability remains a strong predictor of award receipt even after controlling for the year of certification. This pattern indicates that award allocation is related not only to persistent institutional characteristics but also to contemporaneous financial conditions within certification cohorts. In contrast, observable balance sheet variables play a more limited and less systematic role in predicting award receipt among banks.

Taken together, these results show that certification and award allocation reflect meaningful institutional heterogeneity, with credit unions' participation more closely tied to bal-

Table 3. Predicting Award Receipt Given CDFI Certification

This table reports coefficient estimates from specification (2). The dependent variable equals one if a certified institution receives at least one CDFI Fund award within the first three years following certification. The sample includes only institutions that are already CDFI-certified. All specifications include time-varying institution-level control variables. Columns differ by the inclusion of fixed effects for the year of certification, as indicated. See Section 2.2 for data sources and Appendix A for variable definitions. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	Credit Unions		Banks	
	(1)	(2)	(3)	(4)
Is MDI	-0.051	-0.037	-0.051	0.032
	(0.051)	(0.050)	(0.103)	(0.104)
Cash/Assets	-0.086	-0.160	-0.500	-0.680
	(0.242)	(0.220)	(0.472)	(0.455)
Liabilities/Assets	0.857**	0.516	-0.360	-0.230
	(0.402)	(0.383)	(1.128)	(1.283)
ROA	10.152***	7.842***	7.498**	5.406
	(2.389)	(2.211)	(3.297)	(3.645)
Year Certified FE	No	Yes	No	Yes
R^2	0.043	0.179	0.048	0.141
N	496	496	181	181

ance sheet conditions and banks' participation more closely linked to institutional mission characteristics.

In Appendix C, we extend the analysis to a joint outcome that captures both becoming certified and receiving an award within a defined window. The results are broadly consistent with those from the separate certification and award regressions. Among credit unions, leverage and profitability remain strong predictors of the joint outcome, while lower cash buffers are associated with participation in several specifications. In contrast, although MDI status continues to predict participation among banks, balance sheet characteristics are less systematically related to the joint outcome. These findings reinforce the asymmetric role of the CDFI program across organizational forms and confirm that our conclusions do not depend on modeling certification and award receipt separately.

Broader geographic and loan-level evidence in Appendix D indicates that CDFI activity expands more strongly in counties with higher reliance on SBA lending and that CDFI loans are priced above SBA benchmarks, suggesting that the program operates in markets with substantial demand for mission-oriented credit not fully met by existing federal programs.

Having characterized entry into and allocation within the CDFI program, we next examine how certification and subsequent award receipt are associated with changes in intermediary balance sheets. This analysis allows us to study how access to intermediary-targeted federal support translates into observable adjustments in lending capacity, funding structure, and performance.

4 Transmission Through Financial Intermediaries

Section 3 shows that entry into and allocation within the CDFI program reflect persistent institutional heterogeneity, particularly across credit unions and banks. We now provide the core evidence on how federal credit transmits through financial intermediaries. The CDFI program does not lend directly to final borrowers; instead, it alters the funding capacity and risk-bearing ability of certified institutions. Certification establishes eligibility for federal support, while awards represent realized transfers of federal resources. If intermediary-targeted federal support is economically meaningful, it should be reflected in observable changes in intermediary balance sheets. We therefore examine whether certification and, more importantly, award receipt are associated with systematic adjustments in asset growth, funding structure, liquidity management, portfolio allocation, and profitability. These dynamics provide direct evidence on how federal resources are absorbed and redeployed within intermediary balance sheets.

We analyze how institutional balance sheets evolve around the time an institution becomes certified as a CDFI and around the time it receives a CDFI Fund award. These patterns should not be interpreted as causal. Institutions choose whether and when to certify, certified institutions choose whether to apply for awards, and award receipt further reflects the CDFI Fund's allocation decisions. Our estimates therefore document conditional correlations rather than causal effects.

All specifications include institution and county-year fixed effects. Institution fixed effects absorb time-invariant heterogeneity in scale, business model, governance, and mission orientation. County-year fixed effects absorb local credit demand, macroeconomic conditions, and other county-level shocks that jointly affect lending opportunities and balance sheet growth. The sample covers 2011–2024; because outcomes are measured as growth rates or

changes and one award indicator is lagged, the effective estimation period begins in 2012.

We estimate the following panel specification:

$$y_{i,c,t} = \beta \, \text{FirstYearCDFI}_{i,t} + \gamma_0 \, \text{Award}_{i,t} + \gamma_1 \, \text{Award}_{i,t-1} + \nu_i + \nu_{c,t} + \epsilon_{i,c,t}, \tag{3}$$

where $y_{i,c,t}$ denotes an outcome for institution i headquartered in county c and year t. $\text{FirstYearCDFI}_{i,t}$ equals one in the first year of certification. $\text{Award}_{i,t}$ and $\text{Award}_{i,t-1}$ indicate award receipt in year t and the prior year, respectively. This specification allows certification and awards to be associated with contemporaneous and short-run balance sheet adjustments.

Balance sheet growth. Table 4 reports results for annual growth rates of key balance sheet aggregates.

For credit unions, three patterns stand out. First, asset growth increases in the certification year, even after conditioning on institution and county-year fixed effects. This pattern is consistent with certification coinciding with periods of institutional expansion, though we do not interpret this timing as causal.

Second, loan growth is strongly associated with award receipt rather than certification alone. Contemporaneous and lagged award indicators are positively and statistically significantly related to loan growth, whereas certification by itself is not consistently associated with lending expansion once fixed effects are included. This pattern is consistent with awards relaxing internal funding constraints and enabling scale expansion in lending activity.

Third, awarded credit unions expand both assets and liabilities. Growth in loans is accompanied by growth in deposits and non-deposit liabilities, as well as increases in liquid assets. The joint expansion of lending, liquidity, and funding sources suggests active balance sheet management as institutions scale.

Banks exhibit different dynamics. Certified banks also experience asset and loan growth in the certification year. However, because a large share of certified banks receive awards contemporaneously, it is difficult to sharply distinguish certification from award effects for this group. Once institution and county-year fixed effects are included, few growth coefficients remain statistically significant, consistent with certification and awards among banks

Table 4. Balance Sheet Growth

This table reports estimates from specification (3). The dependent variable in each column is the annual growth rate of the indicated balance sheet item, computed as the change in log values. Coefficients are reported for the first year of CDFI certification, the year of CDFI Fund award receipt, and the year following award receipt, as indicated in the table. Panel A reports results for credit unions and Panel B reports results for banks. All specifications include institution and county-year fixed effects. The sample uses data from 2011–2024, with the effective estimation period beginning in 2012 due to growth-rate construction and lagged award indicators. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Panel A: Credit Unions

	(1)	(2)	(3)	(4)	(5)	(6)
	Assets	Loans	Cash and Sec.	Liabilities	Deposits	Non-Dep Liab.
Certified CDFI This Year	0.008**	0.008	0.009	0.009**	0.008**	0.097**
	(0.00)	(0.01)	(0.03)	(0.00)	(0.00)	(0.05)
Award This Year	0.021***	0.026***	0.039	0.019***	0.012***	0.169***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.00)	(0.04)
Award Last Year	0.018***	-0.001	0.062**	0.013***	0.006	0.077*
	(0.00)	(0.01)	(0.03)	(0.00)	(0.00)	(0.04)
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.551	0.377	0.297	0.537	0.547	0.212
N	65,126	65,126	65,126	65,126	65,126	60,610

Panel B: Banks

	(1)	(2)	(3)	(4)	(5)	(6)
	Assets	Loans	Cash and Sec.	Liabilities	Deposits	Non-Dep Liab.
Certified CDFI This Year	0.016	0.030**	-0.057*	0.021*	0.011	0.238*
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.14)
Award This Year	0.005	0.010	0.011	0.003	0.004	-0.016
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.07)
Award Last Year	0.009	0.006	0.018	0.009	0.012	-0.043
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.08)
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.557	0.517	0.425	0.543	0.545	0.351
N	55,728	55,728	55,728	55,728	55,728	55,697

reflecting broader local conditions rather than clear shifts in internal funding capacity.

Balance sheet composition, funding, and performance. Table 5 examines how certification and award receipt relate to changes in portfolio composition, funding structure, and performance.

Among credit unions, award receipt is associated with systematic reallocation rather

Table 5. Balance Sheet Composition, Funding, and Performance

This table reports estimates from specification (3). The dependent variable in each column is indicated by the column title and is either the annual change in a balance sheet share, denoted by Δ, or a flow or performance measure in levels. Coefficients are reported for the first year of CDFI certification, the year of CDFI Fund award receipt, and the year following award receipt, as indicated in the table. Loan Share is defined as loans divided by the sum of loans, cash, and securities. Consumer Loan Share is defined relative to total lending across real estate, consumer, and C&I loans. Leverage is total liabilities divided by total assets, and Deposit Share is deposits divided by total liabilities. NIM is the net interest margin, and ROA is return on assets. All specifications include institution and county-year fixed effects. The sample uses data from 2011–2024, with the effective estimation period beginning in 2012 due to differenced outcomes and lagged award indicators. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Panel A: Credit Unions

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Loan Share	Δ Consumer Loan Share	Δ Leverage	Δ Deposit Share	NIM	ROA
Certified CDFI This Year	-0.001	0.005	0.001**	-0.001	0.001*	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Award This Year	-0.004	0.007*	-0.001**	-0.004***	-0.000	0.003***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Award Last Year	-0.011***	0.014***	-0.001**	-0.005***	-0.001***	0.003***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.292	0.723	0.418	0.221	0.886	0.575
N	65,126	65,117	65,126	65,126	65,126	65,126

Panel B: Banks

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Loan Share	Δ Consumer Loan Share	Δ Leverage	Δ Deposit Share	NIM	ROA
Certified CDFI This Year	0.013**	0.001	0.003*	-0.008**	0.000	-0.000
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Award This Year	-0.001	-0.000	-0.001	0.001	0.000	0.002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Award Last Year	-0.001	0.000	0.000	0.002	0.000	0.001**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.465	0.399	0.467	0.355	0.802	0.752
N	55,728	55,703	55,728	55,728	55,728	55,728

than uniform proportional scaling. Awarded institutions increase the share of consumer lending, consistent with a shift toward mission-aligned credit provision. Because credit unions engage in relatively limited C&I lending, increases in consumer loan share mechanically correspond to reductions in real estate loan share; we therefore focus on consumer lending in the main text and report the complementary real estate share results in the appendix.

At the same time, loan shares decline relative to liquid assets, leverage falls, and the deposit share of liabilities decreases modestly, indicating greater reliance on non-deposit funding. These patterns suggest that awarded credit unions expand lending while simultaneously increasing liquidity buffers and diversifying funding sources. Net interest margins decline modestly following award receipt, while return on assets increases, consistent with scale expansion and funding reoptimization rather than yield-seeking behavior.

For banks, balance sheet composition and funding measures show limited systematic change around certification or award receipt once fixed effects are included. Observable portfolio shares, leverage, and performance metrics do not display patterns comparable to those observed for credit unions. This contrast reinforces the interpretation that credit-union responses reflect adjustments in internal capacity and funding structure, whereas bank responses are less tightly linked to CDFI program participation per se.

Credit union membership expansion. Table 6 examines changes in credit union membership.

Certification is associated with a modest but statistically significant increase in realized membership. Award receipt is positively but imprecisely related to realized membership growth once fixed effects are included.

In contrast, certification is associated with a large and precisely estimated increase in potential membership, defined as the size of the population identified as eligible for membership. This pattern is consistent with institutions redefining or expanding their field of membership around certification, reflecting broader strategic repositioning rather than a purely mechanical regulatory effect.

Taken together, the membership results align with the balance sheet evidence. Certification coincides with broader institutional expansion and repositioning, while award receipt is more closely associated with balance sheet growth and funding adjustments than with immediate, sharply estimated increases in realized membership.

Summary. The results in this section document systematic differences in how credit unions and banks adjust their balance sheets around CDFI certification and award receipt. For credit unions, award receipt is associated with meaningful lending expansion, liquidity accu-

Table 6. Credit Union Membership Expansion

This table reports estimates from specification (3). The dependent variable in each column is the annual growth rate of the indicated membership measure, computed as the change in log values. *Current Members* measures realized membership, while *Potential Members* captures the size of the eligible field of membership. All specifications include institution and county-year fixed effects. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	(1) Current Members	(2) Potential Members
Certified CDFI This Year	0.006*	0.045***
	(0.00)	(0.02)
Award This Year	0.004	-0.001
	(0.00)	(0.01)
Award Last Year	0.003	-0.004
	(0.00)	(0.01)
Institution FE	Yes	Yes
County-Year FE	Yes	Yes
R^2	0.418	0.250
N	65,126	65,126

mulation, funding diversification, portfolio reallocation toward consumer credit, and modest improvements in overall profitability despite narrower margins. These patterns are consistent with awards relaxing internal capacity constraints and facilitating mission-aligned scaling.

For banks, balance sheet responses around certification and awards are less systematically related to funding structure, portfolio composition, or performance once institution and local conditions are absorbed. This contrast highlights important organizational heterogeneity in how intermediary-targeted federal support is reflected in financial statements. Together with the entry and allocation evidence in Section 3, the financial statement dynamics provide a comprehensive picture of how the CDFI program transmits through different types of financial intermediaries.

5 Opportunity Zones and Anticipatory Certification

The certification results in Section 3 raise a natural question: why do institutions pursue CDFI certification at particular points in time? Certification expands eligibility for federal

awards, but it may also enhance an institution's ability to intermediate capital when local investment demand is expected to rise. In this section, we examine whether certification timing responds in anticipation to geographic exposure to the introduction of Opportunity Zones (OZs). We emphasize that OZs capture one salient and measurable source of anticipated place-based demand rather than a comprehensive explanation for certification decisions.

The Opportunity Zone program, established by the Tax Cuts and Jobs Act of 2017, provides capital gains tax incentives for investment in designated low-income census tracts. Although final designations were announced in December 2018, the nomination process unfolded earlier and involved substantial uncertainty. States faced binding caps on the number of tracts they could nominate, and many eligible tracts were observationally similar yet ultimately not designated. As a result, 2017 represents a transition period during which investors and local financial institutions could plausibly anticipate future place-based investment flows without certainty over final designation. A growing literature evaluates the economic effects of OZ designation, with mixed evidence regarding realized investment, employment, and growth effects (e.g., Arefeva, Davis, Ghent, and Park, 2025; Corinth and Feldman, 2024; Hartarska, Hilliard, and Yoon, 2025).

To test whether certification timing responds to anticipated place-based investment demand, we estimate panel regressions in which the dependent variable equals one if institution i becomes CDFI-certified between year t and $t+1$. We construct a continuous measure of institutional exposure to Opportunity Zones based on the share of each institution's ZIP-code footprint mapped to designated OZ census tracts. To sharpen identification, we also compute an eligibility-based exposure measure capturing the share of the same footprint that was eligible for OZ designation regardless of whether designation ultimately occurred. This distinction allows us to separate exposure to realized OZ designations from broader exposure to low-income areas that were plausible candidates ex ante.

All specifications include institution-level controls and county-by-year fixed effects, which absorb local economic conditions, policy variation, and common shocks. Identification therefore comes from within-county-year differences in geographic exposure across institutions. Standard errors are clustered at the institution level. We allow the effect of OZ exposure to vary across time, distinguishing between a pre-period (2011–2016), the 2017 transition year, and the post-designation period (2018 onward).

Table 7. CDFI Certification and Opportunity Zone Exposure

This table reports coefficient estimates from specification (1), augmented with measures of an institution's geographic exposure to designated and eligible Opportunity Zones (OZs). The dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$. *OZ Share* measures the fraction of an institution's ZIP-code footprint designated as an Opportunity Zone, while *OZ-Eligible Share* measures the fraction of the same footprint that is eligible for OZ designation. "Post-2017" equals one for years 2017 and later, and "2017" indicates the transition year during the OZ nomination and designation process. All specifications include institution-level controls and county-by-year fixed effects. See Section 2.2 for data sources and Appendix A for variable definitions. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	Credit Unions				Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OZ Share	-0.000	-0.001	-0.001	0.001	0.002*	0.002*	-0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
OZ Share x Post-2017	0.006*	0.007**			-0.004*	-0.004*		
	(0.003)	(0.003)			(0.002)	(0.002)		
OZ Share x 2017			0.017**	0.016**			0.003	0.004
			(0.008)	(0.008)			(0.003)	(0.005)
OZ-Eligible Share			0.003**				0.001	
			(0.001)				(0.001)	
OZ-Eligible Share x 2017			0.002				0.000	
			(0.004)				(0.002)	
Is MDI	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Cash/Assets	-0.009***	-0.007**	-0.009***	-0.007**	-0.001	-0.002	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Liabilities/Assets	0.043***	0.049***	0.044***	0.049***	0.004	0.005	0.004	0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)
ROA	0.153***	0.177***	0.153***	0.175***	-0.017	-0.027	-0.016	-0.027
	(0.048)	(0.053)	(0.049)	(0.053)	(0.030)	(0.037)	(0.030)	(0.037)
Sample	Full	Elig. Only	Full	Elig. Only	Full	Elig. Only	Full	Elig. Only
County-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.191	0.204	0.191	0.204	0.416	0.425	0.416	0.425
N	60,887	52,929	60,887	52,929	55,425	45,007	55,425	45,007

Table 7 reports the baseline results. Among credit unions, greater exposure to designated Opportunity Zones is associated with a significantly higher likelihood of certification in the subsequent year during the 2017 transition period. The estimated effect is similar when restricting the sample to institutions operating in ZIP codes with some eligible geography, indicating that the timing response is not driven by comparisons with clearly ineligible areas. In contrast, we find no comparable response among banks.

Figure 2 provides an event-time representation of these estimates for credit unions. The increase in certification likelihood is concentrated entirely in 2017, the year of nomination and uncertainty. We find little evidence of elevated certification responses after designations

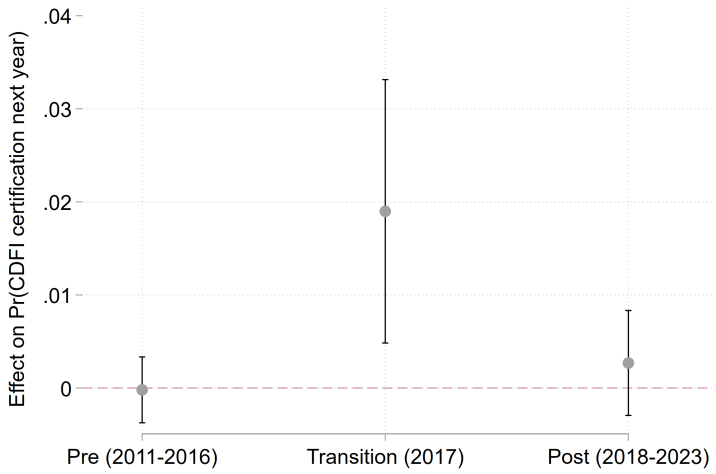


Figure 2. Event-time Estimates: Opportunity Zone Exposure and CDFI Certification

This figure plots the estimated marginal effect of Opportunity Zone (OZ) exposure on the probability that a credit union becomes CDFI-certified in the following year. Estimates are obtained from a panel regression similar to that in Table 7, but allowing the effect of OZ Share to vary over time. Years are grouped into a pre-period (2011–2016), a transition year (2017), and a post-period (2018–2023). All specifications include institution-level controls and county-by-year fixed effects. Points denote coefficient estimates and vertical bars indicate 95 percent confidence intervals based on standard errors clustered at the institution level. The dashed horizontal line indicates zero.

were finalized despite the continued availability of OZ tax benefits. This timing pattern is difficult to reconcile with a mechanical response to realized investment flows. Instead, it is consistent with institutions seeking certification in anticipation of place-based capital demand during the period of greatest uncertainty.

To assess whether this anticipatory certification response is driven by a narrow subset of institutions, Appendix C.5 examines heterogeneity in the 2017 OZ–certification relationship across credit unions with different mission orientations and balance sheet characteristics. Specifically, we interact OZ exposure in 2017 with indicators for MDI status and for low liquidity, high leverage, and high profitability. Across specifications, we find little evidence that the 2017 OZ-related timing response is concentrated among particular types of credit unions. The baseline interaction between OZ exposure and the 2017 transition year remains positive and of similar magnitude, while the additional triple-interaction terms are statistically indistinguishable from zero. These results suggest that anticipatory certification in response to OZ exposure reflects a broad-based shift in incentives rather than behavior driven primarily

by observable balance sheet tightness or mission status.

Taken together, the results in this section indicate that credit unions disproportionately sought CDFI certification in anticipation of place-based investment demand during the OZ nomination phase rather than in response to realized investment flows after designations were finalized. The absence of a comparable response among banks reinforces the asymmetric role of CDFI certification across organizational forms. For credit unions, certification appears to serve as a strategic mechanism to position themselves for anticipated local investment opportunities. For banks, whose regulatory structure and funding access differ materially, certification plays a more limited role in shaping strategic timing decisions.

Importantly, subsequent empirical work documents that Opportunity Zones generated modest or uneven realized investment and economic growth effects (e.g., Arefeva et al., 2025; Corinth and Feldman, 2024; Hartarska et al., 2025). In this light, the 2017 certification response among credit unions is consistent with a forward-looking attempt to position for expected capital inflows that may not have fully materialized. This interpretation complements the balance sheet evidence in Section 4 and underscores that certification decisions reflect expectations about future demand rather than contemporaneous balance sheet stress.

6 Conclusion

This paper studies how federal credit programs transmit through financial intermediaries. Using the setting of Community Development Financial Institutions (CDFIs), we examine how certification and federal award eligibility reshape intermediary balance sheets, funding structure, and strategic behavior. Rather than allocating credit directly to borrowers, the CDFI program operates by expanding the capital capacity and funding access of certified institutions. We provide evidence on how this eligibility mechanism affects participation decisions, balance sheet composition, and the timing of institutional entry into the program.

We document that certification decisions differ systematically across organizational forms. Among credit unions, certification is more likely when institutions exhibit lower liquidity, higher leverage, and stronger profitability, consistent with certification expanding access to external capital. In contrast, bank certification is less tightly linked to balance sheet characteristics and appears more closely associated with mission orientation and local

conditions. Conditional on certification, award allocation is more strongly predicted by financial performance among credit unions than among banks. These patterns suggest that certification and awards operate differently across intermediary types.

Turning to transmission, we show that certification and award receipt coincide with meaningful balance sheet adjustments. Credit unions experience asset growth, funding diversification, and modest shifts in loan composition following certification and awards. Net interest margins compress slightly while return on assets increases, consistent with expansion into mission-oriented lending supported by enhanced capital capacity. These results indicate that federal support affects intermediary behavior through balance sheet channels rather than through mechanical lending mandates.

We further show that certification timing responds to anticipated local investment opportunities. Credit unions with greater geographic exposure to areas designated as Opportunity Zones were significantly more likely to seek certification during the 2017 nomination period, prior to final designation. This anticipatory response is absent among banks. The timing evidence suggests that certification serves as a strategic tool for positioning intermediaries to meet expected future demand, reinforcing the interpretation of certification as an option to expand capital capacity rather than a purely contemporaneous response to balance sheet stress.

Our findings contribute to a broader understanding of how indirect federal credit programs operate within the financial system. By altering intermediary constraints and incentives, such programs reshape the allocation of credit capacity across institutions and local markets. The ultimate impact of these programs therefore depends not only on statutory design but also on how heterogeneous intermediaries respond to certification incentives and funding opportunities. Recent Federal Reserve survey evidence underscores the perceived importance of federal programs to CDFI underwriting flexibility and mission delivery, as well as sustained demand for CDFI products in underserved markets (Federal Reserve Bank of Richmond, 2025). Understanding the interaction between demand conditions and intermediary balance sheet constraints remains central to evaluating the long-run effectiveness of mission-oriented finance.

Several directions for future research remain. First, further work could examine borrower-level outcomes to assess how certification-induced balance sheet changes translate into credit

access and firm performance. Second, comparative analysis of CDFIs and other nonbank lenders could clarify how different institutional forms respond to federal support and local credit demand. Finally, as demand for mission-oriented lending evolves, understanding the sustainability of intermediary expansion under varying macroeconomic conditions will be critical for assessing the design and scope of indirect federal credit programs.

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A Variable Definitions and Construction

Table A.1. Variable Definitions

Name	Formula
Net Interest Margin (NIM)	Net Interest Income / Beginning-of-Year Assets
Interest Income Ratio	Interest Income / Beginning-of-Year Assets
Interest Expense Ratio	Interest Expense / Beginning-of-Year Assets
Return on Assets (ROA)	Net Income / Beginning-of-Year Assets
Cost of Debt	Interest Expense / Average Liabilities
Cash and Sec.	Cash + Securities
Non-Dep Liab.	Liabilities - Deposits
Loan Share	Loans / Assets
RE Loan Share	RE Loans / (RE Loans + Consumer Loans + C&I Loans)
Consumer Loan Share	Consumer Loans / (RE Loans + Consumer Loans + C&I Loans)
C&I Loan Share	C&I Loans / (RE Loans + Consumer Loans + C&I Loans)
Leverage	Liabilities / Assets
Deposit Share	Deposits / Liabilities
Liab. Ratio	Liabilities / (Cash + Securities + Loans)

Notes: The underlying variables in the formulas are constructed from call report data as described in Table A.2.

Table A.2. Construction of Consistent Time Series from Call Reports

Name	Commercial Banks	Credit Unions
Assets	max(RCFD2170, RCON2170)	ACCT_010
Cash	max(RCFD0081+RCFD0071, RCON0081+RCON0071)	ACCT_730A+ACCT_730B+ACCT_730C
Securities (HTM)	If $t \leq$ 2018q4: max(RCFD1754, RCON1754) If $t \geq$ 2019q1: max(RCFDJJ34, RCONJJ34)	ACCT_797E
Securities (AFS)	If $t \leq$ 2017q4: max(RCFD1773, RCON1773) If $t \geq$ 2018q1: max(RCFD1773, RCON1773) + max(RCFDJA22, RCONJA22)	ACCT_796E
Securities (Total)	Securities (HTM) + Securities (AFS)	
Loans (Gross)	RCFD2122	ACCT_025B
Allowance for Loan and Lease Losses	RCFD3123	ACCT_719+ACCT_AS0048
Loans (Net)	Loans and Leases (Gross) − Allowance for Loan and Lease Losses	
C&I Loans	max(RCON1763+RCON1764, RCFD1763+RCFD1764, RCON1766)	If $t \leq$ 2017q2: ACCT_400L+ACCT_400L1 If $t \geq$ 2017q3: ACCT_400L2+ACCT_400L3
Credit Card Loans and LOC	max(RCFDB538+RCFDB539, RCONB538+RCONB539)	—
Other Consumer Loans (Banks)	max(RCFDK207+RCFDK137, RCONK207+RCONK137)	—
Credit Card and Auto Loans	—	ACCT_396 + ACCT_385 + ACCT_370
Other Consumer Loans (CUs)	—	If $t <$ 2017q2: ACCT_397 + ACCT_397A + ACCT_698 If $t \geq$ 2017q2: ACCT_397 + ACCT_397A + ACCT_698A + ACCT_698B + ACCT_698C

Continued on next page

Name	Commercial Banks	Credit Unions
Consumer Loans	(Credit Card Loans and LOC) + (Other Consumer Loans (Banks))	(Credit Card and Auto Loans) + (Other Consumer Loans (CUs))
RE Loans	max(RCFD1410, RCON1415+RCON1420+RCON1797+RCON5367, RCON5368+RCON1460+RCON1480, RCONF158+RCONF159+RCON1420+RCON1797, RCON5367+RCON5368+RCONF160+RCONF161)	ACCT_703+ACCT_386
Liabilities	max(RCFD2948, RCON2948)	ACCT_860C+ACCT_820A+ACCT_825+ACCT_018 If 2014q3 $\leq t \leq$ 2018q4: Also Add ACCT_825A If $t \geq$ 2019q3: Also Add ACCT_825A+ACCT_LI0003
Deposits	RCON2200 + RCFN2200	ACCT_018
Liabilities and Equity	max(RCFD3300, RCON3300)	ACCT_014
Equity	(Liabilities and Equity) - (Liabilities)	
Net Interest Income	RIAD4074	ACCT_116
Interest Income	RIAD4107	ACCT_115
Interest Expense	RIAD4073	ACCT_350
Current Members	*NA*	ACCT_083
Potential Members	*NA*	ACCT_084

Notes: Commercial bank data and underlying variable mnemonics are from the FFIEC Call Reports. Credit union data and underlying variable mnemonics are from the NCUA Call Reports. Missing values are treated as zeroes where variables are not reported or not applicable. Date conditions are shown only where they apply in the post-2009 sample window used in the paper. "Loans" include both loans and leases.

B CDFI Award Programs

A central benefit of CDFI certification is access to the financial and technical resources administered by the CDFI Fund. Certified institutions are eligible to apply for several programs that support lending activity, balance sheet strength, operational capacity, and community development services. Awards can take the form of cash grants, loans, or tax credits and can be used for activities such as lending capital, loan loss reserves, staffing, training, and technology. This appendix provides additional detail on these award programs and documents the evolution of award volumes, program composition, and participation patterns. The main text provides only a high-level description of this structure.

Figure B.1 shows how total awards to certified CDFIs have evolved over time. Awards were relatively small during the early years of the CDFI Fund but increased to roughly $1 billion per year in the 2000s. Award volumes continued to grow in subsequent years, reaching $1.5 billion across 536 awards in 2019. Activity rose sharply in 2021 and 2022 in connection with pandemic recovery efforts, with totals of roughly $3 billion and more than 1,000 awards per year. Awards declined in 2023 as large, pandemic-era funding initiatives concluded and the CDFI Fund did not conduct a standard award cycle that year.

The aggregate amounts in Figure B.1 combine awards from several programs that are only available to certified CDFIs, including:

- CDFI Program awards for Financial Assistance (CDFI-FA) and Technical Assistance (CDFI-TA). CDFI-FA awards are generally intended to support lending and balance sheet strength, while CDFI-TA awards support equipment, supplies, consulting services, personnel, and training.
- The CDFI Rapid Response Program (RRP) and the CDFI Equitable Recovery Program (ERP), which were temporary, pandemic-era initiatives that supported CDFIs in delivering assistance and investing in communities and borrowers disproportionately impacted by the COVID-19 pandemic.

In the left panel of Figure B.2, we observe that CDFI-FA awards have been the dominant and consistent source of funding for certified CDFIs since the inception of the CDFI Fund. In aggregate, this program has provided $150 to $250 million per year to CDFIs

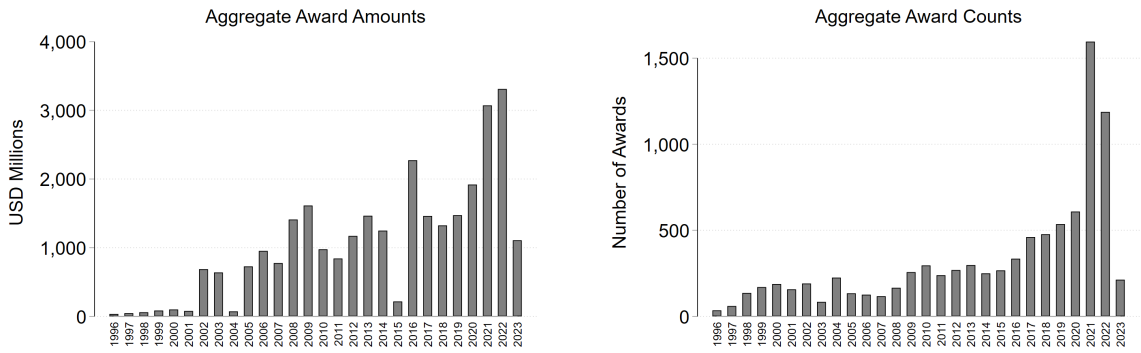


Figure B.1. Awards to CDFIs Over Time
This figure reports the aggregate amount and number of awards distributed to certified CDFIs by the CDFI Fund through through any of its programs. See Section 2.2 for data sources.

between 2010 and 2022. The sharp increases in awards in 2021 and 2022 reflect the introduction of the Rapid Response Program (RRP) and the Equitable Recovery Program (ERP), respectively, which were temporary, pandemic-era initiatives targeted to certified CDFIs. In 2023, following the expiration of these programs, the CDFI Fund did not conduct a standard CDFI-FA award round, resulting in no awards through CDFI-only programs that year.

The CDFI Fund also operates programs whose awards can go to both CDFIs and non-CDFIs. These programs include:

- The New Markets Tax Credit (NMTC) program, which incentivizes community development and economic growth by attracting private investment to distressed communities through tax credits. Applicants must be certified as Community Development Entities (CDEs) by the CDFI Fund. CDE certification is distinct from CDFI certification and requires only that the entity have a primary mission of serving low-income communities.
- The CDFI Bond Guarantee Program (BOND), which provides long-term loans from the Federal Financing Bank to eligible CDFIs with the goal of channeling substantial investment to distressed communities.
- The Capital Magnet Fund (CMF), which provides grants to support affordable housing and related community development activities that benefit low-income people and communities nationwide. Awardees must be certified CDFIs or nonprofit organizations with a principal purpose of developing or managing affordable housing.

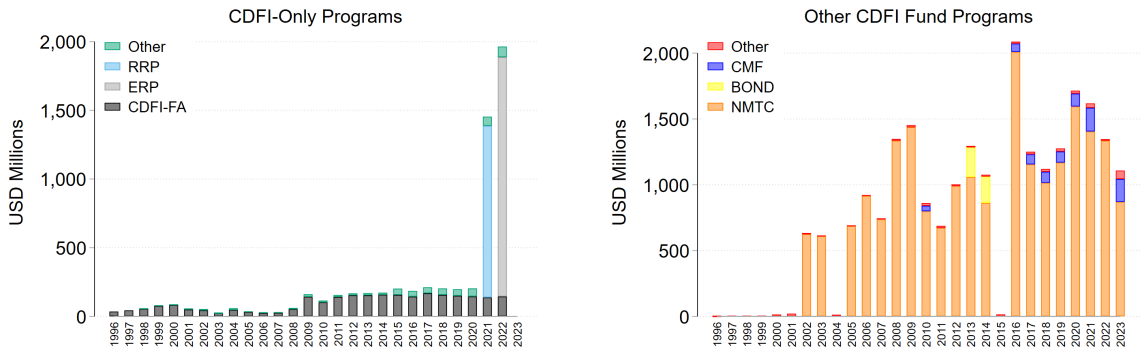


Figure B.2. Awards to CDFIs by Program

The left panel shows the aggregate amount of awards distributed to certified CDFIs by the CDFI Fund through programs that are only available to certified CDFIs. The right panel shows aggregate amounts provided to certified CDFIs through programs that are also available to non-CDFIs. See Section 2.2 for data sources.

In the right panel of Figure B.2, we report the aggregate amounts awarded to CDFIs from these programs that are not exclusively available to CDFIs. The vast majority of these funds come from the NMTC program. In fact, these amounts represent the majority of financial support from the CDFI Fund to CDFIs when we consider all programs together, which can be inferred by comparing the size of the bars in the left and right panels.

Despite being larger in terms of aggregate amounts, the NMTC program reaches fewer institutions than the CDFI-FA program. For example, the left panel of Figure B.3 shows that between 100 and 250 CDFIs receive a CDFI-FA award per year since 2010, compared to around 25 CDFIs per year that receive an NMTC award during the same period. Further, only around half of NMTC award recipients also receive a CDFI-FA award, which highlights that these are relatively distinct sets of institutions.

The right panel of Figure B.3 shows that the average size of an NMTC award is much larger than a CDFI-FA award. Depending on the year, the median NMTC award is between \$20 million and \$60 million while the median CDFI-FA award is between \$0.5 million and \$1.0 million.

Only 64.2% of certified CDFIs ever receive an award. This percentage differs across institution types, which are shown in Figure B.4. Banks obtain awards at the highest rates, which suggests they are more motivated to become certified as CDFIs for the financial resources, or that they face different eligibility or capacity constraints across programs.

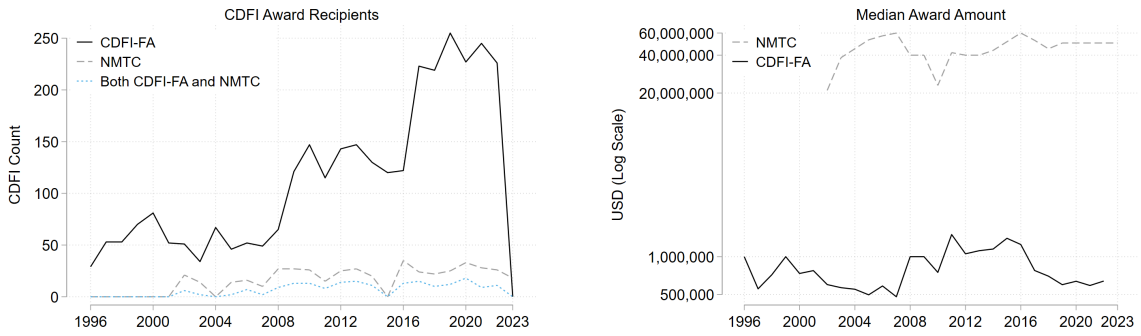


Figure B.3. Awards to CDFIs Across Select Programs
The left panel shows the number of CDFIs that received an award from the CDFI-FA and NMTC programs in each year, as well as the number of CDFIs that received an award from both programs in the same year. The right panel shows the median award amount from each program in each year. See Section 2.2 for data sources.

In the right panel of Figure B.4, we also report the distribution of the time it takes CDFIs to receive an award. Among CDFIs that ever received an award, around two thirds do so in less than one year after becoming certified. Less than 20% of CDFIs that eventually receive an award do so three or more years after certification. Such delays can be caused by rejected applications or by institutions choosing to wait before applying.

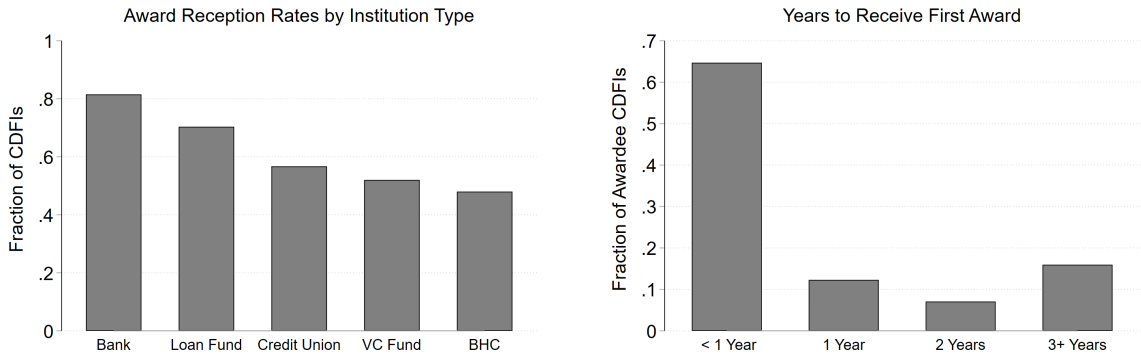


Figure B.4. Award Reception Rates and Time to Receiving Awards
The left panel shows the fraction of certified CDFIs that ever received an award by institution type. "Bank" includes banks and thrifts. "BHC" includes bank holding companies and depository institution holding companies. The right panel shows the fractions of CDFIs according to the time it took them to receive their first award. See Section 2.2 for data sources.

C Additional Output from Empirical Analysis

This appendix provides supplementary empirical results that complement the analysis reported in the main text.

C.1 Aggregate Growth in Certified CDFIs

Figure C.1 reports the number of certified CDFIs by institutional type, including banks, credit unions, loan funds, and venture capital funds (see Section 2.1). The sector has expanded substantially over time. In 1996, 145 institutions were certified. Between 2011 and 2024, the total count increased from 967 to 1,461.

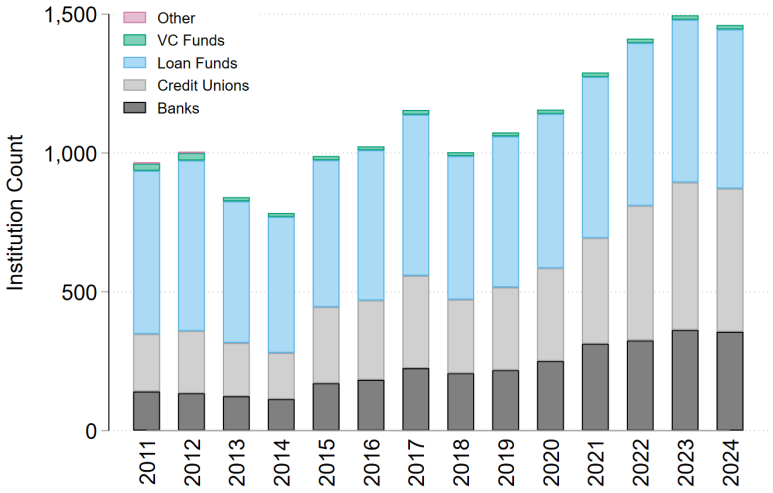


Figure C.1. Counts of CDFIs Over Time
This figure reports the number of certified CDFIs by institution type in each year as of June 30. See Section 2.2 for data sources.

Loan funds account for the majority of certified institutions by count. However, as discussed in Section 2.1, they represent a much smaller share of aggregate CDFI investment activity. The 2019 CDFI Annual Certification and Data Collection Report indicates that loan funds comprise 50.6 percent of certified CDFIs but only 11.1 percent of aggregate CDFI investments.[6]

[6]https://www.cdfifund.gov/sites/cdfi/files/2021-01/ACR-Public-Report-Final-10292020-508Compliant.pdf

C.2 Asset Size Distributions

Table 1 reveals a few facts related to institution asset size. In general, CDFIs are quite small on average, with assets far less than $1 billion. Within institution type, certified credit unions are larger on average than non-certified credit unions, while certified banks tend to be smaller than non-certified banks. These patterns are visible in the asset size distributions shown in Figure C.2.

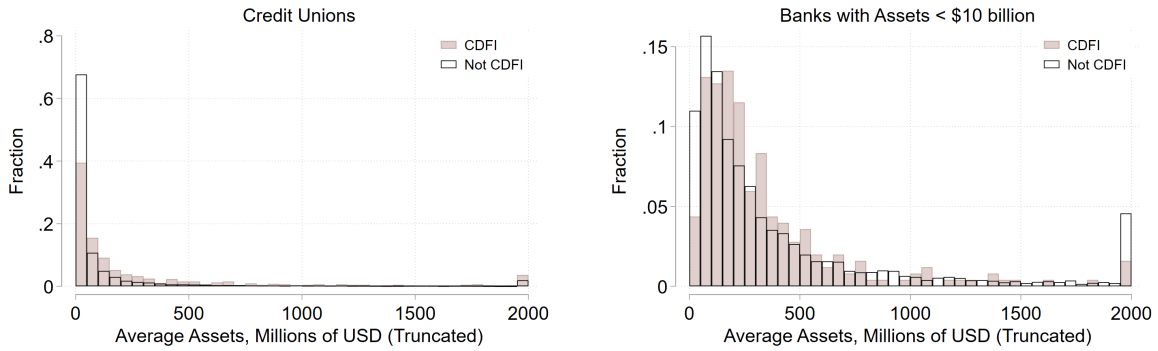


Figure C.2. Asset Size Distribution by Institution Type and CDFI Status
Average asset values are truncated for visual purposes and each bar represents an increment of $50 million. The underlying sample matches the institutions used in Table 1. See Section 2.2 for data sources and Appendix A for variable details.

C.3 Predicting Certification and Award Receipt

To study the joint decision to certify and subsequently receive a CDFI Fund award, we estimate

$$\text{CDFI Certification and Award}_{i,c,t+1} = \beta' X_{i,t} + \nu^{(k)} + \epsilon_{i,c,t}, \tag{4}$$

where the dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$ and receives at least one CDFI Fund award within the first three years following certification. $X_{i,t}$ is a vector of time-varying institution-level control variables and $\nu^{(k)}$ denotes alternative fixed effect structures, including county-year fixed effects, county and year fixed effects, and institution fixed effects, as indicated in the table.

The estimation sample includes institution-year observations in which the institution is not certified in year t, allowing institutions to contribute multiple observations prior to

Table C.1. Predicting CDFI Certification and Receiving an Award

This table shows coefficient estimates from estimating specification (4). The dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$ and receives at least one CDFI Fund award within the first three years following certification. The underlying annual data cover the period 2011 through 2023. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	Credit Unions				Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Is MDI	0.004***	0.004***			0.003*	0.005**		
	(0.001)	(0.001)			(0.002)	(0.002)		
Cash/Assets	-0.002	-0.003	-0.008**	-0.007*	-0.002	-0.002*	-0.006	-0.005
	(0.002)	(0.002)	(0.003)	(0.004)	(0.001)	(0.001)	(0.004)	(0.004)
Liabilities/Assets	0.021***	0.019***	0.023**	0.023*	0.010***	0.002	0.011	0.007
	(0.002)	(0.003)	(0.012)	(0.014)	(0.002)	(0.003)	(0.012)	(0.015)
ROA	0.189***	0.149***	0.110***	0.108**	0.054***	0.004	-0.017	0.070
	(0.031)	(0.035)	(0.036)	(0.044)	(0.020)	(0.023)	(0.035)	(0.044)
County-Year FE	No	Yes	No	Yes	No	Yes	No	Yes
County FE	No	No	Yes	No	No	No	Yes	No
Year FE	No	No	Yes	No	No	No	Yes	No
Institution FE	No	No	Yes	Yes	No	No	Yes	Yes
R^2	0.002	0.177	0.162	0.314	0.000	0.412	0.176	0.522
N	67,579	60,887	67,267	60,578	66,125	55,425	65,825	55,086

certification. This stacked panel structure mirrors the specification used in the main text to predict CDFI certification in Section 3.3. The only difference is that the dependent variable additionally conditions on receiving an award from the CDFI Fund within a fixed post-certification window.

As in the main analysis, the underlying annual data cover the period 2011 through 2023, which corresponds to the final year with observed new depository institution certifications. We restrict the sample to this period because there are effectively no new depository institution certifications observed in 2024. Nonetheless, results are unchanged if the sample is extended through 2024.

This combined outcome reflects both an institution's decision to seek certification and funding and the CDFI Fund's decision to allocate awards. As a result, the coefficients capture the correlates of this joint event rather than the separate components of certification and award receipt. This interpretation is consistent with the discussion of CDFI Fund award programs in Appendix B.

Overall, the results indicate that the characteristics predicting certification among credit unions also predict which newly certified institutions receive CDFI Fund awards, whereas balance sheet characteristics play a more limited role for banks.

C.4 Extended Balance Sheet Composition Results

This subsection reports additional balance sheet composition and pricing results that complement the analysis in Section 4. Whereas the main text focuses on a parsimonious set of asset growth, liquidity, funding, and performance measures that are most directly informative about capacity expansion and mission-aligned lending, the results here provide a broader decomposition of portfolio shares, liability structure, and interest margins. These estimates are reported for completeness and to document robustness across alternative outcome definitions rather than to introduce new mechanisms.

Table C.2 applies the main transmission specification to a broader set of outcome variables. For credit unions, the extended results confirm the central patterns documented in Section 4. Award receipt is associated with portfolio reallocation and funding adjustments that are consistent with balance sheet expansion and liquidity management rather than increased risk-taking. For example, movements in consumer and real estate loan shares mirror the compositional shifts implied by aggregate loan growth, while interest income and expense ratios evolve in ways consistent with scale expansion and funding diversification rather than aggressive margin chasing.

For banks, by contrast, the corresponding coefficients are generally small and statistically insignificant once institution and county-year fixed effects are included. The absence of systematic portfolio or pricing adjustments reinforces the conclusion that balance sheet reoptimization around certification and award receipt is concentrated among credit unions rather than reflecting broad demand-driven responses across organizational forms.

Taken together with the main text results, these extended specifications strengthen the interpretation that CDFI Fund awards primarily relax internal constraints for credit unions, enabling capacity-building adjustments within intermediary balance sheets, while playing a more limited role in shaping banks' portfolio and funding choices.

Table C.2. Extended Balance Sheet Composition Results

This table reports estimates from specification (3). The dependent variable in each column is indicated by the column title and is either the annual change in a balance sheet share, denoted by Δ, or a flow or performance measure in levels. Coefficients are reported for the first year of CDFI certification, the year of CDFI Fund award receipt, and the year following award receipt, as indicated in the table. Loan Share is defined as loans divided by the sum of loans, cash, and securities. Real Estate (RE) and C&I Loan Shares are defined relative to total lending across real estate, consumer, and C&I loans. The alternative liability ratio is total liabilities divided by the sum of cash, securities, and loans. Interest Income and Interest Expense Ratios are defined relative to total assets. All specifications include institution and county-year fixed effects. The sample uses data from 2011–2024, with the effective estimation period beginning in 2012 due to differenced outcomes and lagged award indicators. See Section 2.2 for data sources and Appendix A for variable details. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Panel A: Credit Unions

	(1)	(2)	(3)	(4)	(5)
	Δ RE Loan Share	Δ C&I Loan Share	Δ Liab. Ratio	Interest Income Ratio	Interest Expense Ratio
Certified CDFI This Year	-0.005	0.000	-0.005	0.001***	0.000
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Award This Year	-0.006*	-0.000	-0.021***	0.000	0.000*
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Award Last Year	-0.015***	0.001*	-0.001	0.000	0.000
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Institution FE	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes
R^2	0.723	0.236	0.281	0.866	0.811
N	65,117	65,117	65,126	65,126	65,126

Panel B: Banks

	(1)	(2)	(3)	(4)	(5)
	Δ RE Loan Share	Δ C&I Loan Share	Δ Liab. Ratio	Interest Income Ratio	Interest Expense Ratio
Certified CDFI This Year	-0.001	-0.000	0.009	0.001	0.000
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Award This Year	-0.002	0.003	-0.006	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Award Last Year	0.001	-0.002	-0.002	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Institution FE	Yes	Yes	Yes	Yes	Yes
County-Year FE	Yes	Yes	Yes	Yes	Yes
R^2	0.427	0.440	0.356	0.851	0.908
N	55,703	55,703	55,728	55,728	55,728

C.5 Heterogeneity in Anticipatory Certification Responses to Opportunity Zones

This subsection extends the analysis in Section 5 by examining whether the 2017 relationship between Opportunity Zone (OZ) exposure and subsequent CDFI certification is concentrated among types of credit unions. If certification in 2017 reflects a forward-looking attempt to

intermediate anticipated place-based investment demand, one possibility is that the response is driven primarily by institutions with specific mission orientation or balance sheet characteristics that proxy for funding constraints or lending capacity. Alternatively, the response may reflect a broad-based shift in strategic positioning across the credit-union sector.

We focus on the credit-union sample and restrict attention to institutions headquartered in ZIP codes with some OZ-eligible geography, consistent with the preferred identification sample in Section 5. We estimate variants of the baseline certification specification that interact OZ exposure with an indicator for the 2017 transition year and, in turn, with institution-level characteristics:

$$\begin{aligned}\text{CDFI Certification}_{i,c,t+1} = \beta' X_{i,t} + \theta\big(\text{OZ Share}_i \times \mathbb{1}\{t = 2017\}\big) \\ + \delta\big(\text{OZ Share}_i \times \mathbb{1}\{t = 2017\} \times Z_{i,t}\big) + \nu_{c,t} + \epsilon_{i,c,t},\end{aligned} \tag{5}$$

where $\text{CDFI Certification}_{i,c,t+1}$ equals one if institution i becomes CDFI-certified between year t and $t+1$. OZ Share_i measures the fraction of the institution's ZIP-code footprint designated as an Opportunity Zone. $X_{i,t}$ includes the same time-varying institution controls as in Section 5. $\nu_{c,t}$ denotes county-by-year fixed effects, and standard errors are clustered at the institution level.

The heterogeneity indicator $Z_{i,t}$ alternates across specifications. We consider (i) mission orientation, captured by an indicator for minority depository institution (MDI) status, and (ii) balance sheet characteristics defined within year using quartile cutoffs: *Low Cash* (bottom quartile of cash-to-assets), *High Leverage* (top quartile of liabilities-to-assets), and *High ROA* (top quartile of return on assets). Each column includes the baseline interaction OZ Share $\times$ 2017 and adds a single triple interaction with $Z_{i,t}$, holding the sample fixed across columns.

Table C.3 reports the results. Across specifications, the coefficient on OZ Share $\times$ 2017 remains positive and of similar magnitude to the baseline estimates reported in Section 5. The triple-interaction terms are small in magnitude and statistically indistinguishable from zero. In economic terms, this implies that the sensitivity of certification timing to OZ exposure in 2017 does not differ meaningfully between MDIs and non-MDIs, nor between institutions with relatively low liquidity, high leverage, or high profitability.

These findings suggest that the 2017 anticipatory certification response to OZ exposure was not driven by a narrow subset of constrained or mission-oriented credit unions. Instead,

Table C.3. Heterogeneity in Opportunity-Zone-Induced Certification Responses
This table reports coefficient estimates from estimating variants of specification (1) that interact OZ exposure with the 2017 transition year and with institution characteristics. The sample includes credit unions headquartered in ZIP codes with positive OZ-eligible geography. The dependent variable equals one if an institution becomes CDFI-certified between year t and $t+1$. *OZ Share* measures the fraction of an institution's ZIP-code footprint designated as an OZ. Each column adds a single triple interaction of OZ Share×2017 with a heterogeneity indicator: *Is MDI*, *Low Cash*, *High Leverage*, or *High ROA*. Balance-sheet-based indicators are defined within year and institution type using quartile cutoffs. All specifications include institution-level controls and county-by-year fixed effects. See Section 2.2 for data sources and Appendix A for variable definitions. Standard errors clustered at the institution level are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	Credit Unions				
	(1)	(2)	(3)	(4)	(5)
OZ Share	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
OZ Share x 2017	0.016**	0.019**	0.020**	0.013	0.010
	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)
OZ Share x 2017 x Is MDI		-0.015			
		(0.014)			
OZ Share x 2017 x Low Cash			-0.016		
			(0.014)		
OZ Share x 2017 x High Leverage				0.015	
				(0.018)	
OZ Share x 2017 x High ROA					0.025
					(0.016)
Is MDI	0.009***	0.009***	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Cash/Assets	-0.007**	-0.007**	-0.008**	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Liabilities/Assets	0.049***	0.049***	0.049***	0.048***	0.049***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
ROA	0.175***	0.176***	0.176***	0.177***	0.163***
	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
Sample	Elig. Only	Elig. Only	Elig. Only	Elig. Only	Elig. Only
County-Year FE	Yes	Yes	Yes	Yes	Yes
R^2	0.204	0.204	0.204	0.204	0.204
N	52,929	52,929	52,929	52,929	52,929

the evidence is more consistent with a sector-wide strategic response to anticipated place-based capital inflows during the OZ nomination phase. This broad-based pattern reinforces the interpretation in Section 5 that certification timing reflects forward-looking positioning rather than balance sheet distress or idiosyncratic institutional characteristics.

D Geographic Expansion of the CDFI Sector

This appendix documents the expansion of the CDFI sector along institutional, geographic, and loan-level dimensions. We first describe changes in the number and size of certified institutions. We then examine geographic expansion across counties, focusing on both the extensive margin of CDFI entry and the intensive margin of loan fund activity. Finally, we compare loan-level characteristics and pricing of CDFI and SBA lending.

The geographic patterns documented here provide systematic evidence on the local conditions under which mission-oriented financial intermediaries expand. By analyzing county-level entry and growth of CDFIs alongside loan-level comparisons with SBA lending, we identify the types of credit markets in which CDFIs are most active and assess how their lending differs from other forms of government-supported credit. These results characterize the evolving footprint of the CDFI sector and its interaction with local economic conditions and alternative federal credit channels.

D.1 Data for Geographic and Loan-Level Analysis

This analysis relies on additional datasets beyond those used in the institution-level panel described in Section 2.2.

To approximate the presence and lending activity of CDFI loan funds, we use the transaction-level report (TLR) dataset from the CDFI Fund. Each investment observation includes loan terms and borrower location, which allow us to measure and aggregate CDFI lending flows at the county level. The dataset does not identify the specific originating institution and does not provide borrower names. Moreover, not all CDFIs report investment-level activity to the CDFI Fund, so the data do not represent the full universe of CDFI lending. In practice, reported activity in the TLR is dominated by loan fund CDFIs rather than depository institutions. The version of the dataset used here covers the period 2000 through 2021.

To measure geographic footprint and local banking conditions, we use branch location data from the FDIC Summary of Deposits for banks and headquarters location information from regulatory filings for both banks and credit unions. We compute county-level banking

concentration using a Herfindahl-Hirschman Index (HHI) based on deposit shares.

We draw on external data sources to characterize local economic conditions and government-supported lending activity. Community Reinvestment Act (CRA) disclosures are used to measure small business lending by banks at the institution-county-year level. We use data on loans made through the Small Business Administration (SBA) 7(a) program to proxy for reliance on government-supported small business financing. County-level demographic and economic data are obtained from the Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics.

D.2 County-Level Entry of CDFIs

We examine geographic expansion using county-level data between 2013 and 2021. The start date aligns with the end of the sample period in Swack, Hangen, and Northrup (2015) and coincides with a period of substantial growth in depository CDFIs. The endpoint reflects the most recent year of available TLR data.

CDFIs may enter a county through several channels. A depository institution already operating in a county may obtain certification. A new loan fund may form and list an address in the county. Alternatively, a loan fund may become active in a county without listing an address there. To capture meaningful activity, we classify a county as having loan fund presence if at least ten TLR loans are observed in 2021. Other forms of entry, such as branch openings by certified institutions, occur infrequently.

Figure D.1 illustrates substantial growth in CDFI presence across counties between 2013 and 2021. This expansion is driven largely by loan funds, whose geographic footprint expands more rapidly than that of depository CDFIs.

To characterize entry patterns, we estimate:

$$\text{New CDFI Presence}_c = \beta' X_{c,2012} + \nu_{state} + \epsilon_c, \tag{6}$$

where the dependent variable indicates CDFI presence in 2021 by institution type. The sample includes counties without CDFI presence in 2013. Explanatory variables measure credit market conditions, economic conditions, and demographics in 2012. We estimate separate regressions for depository CDFIs and loan funds.

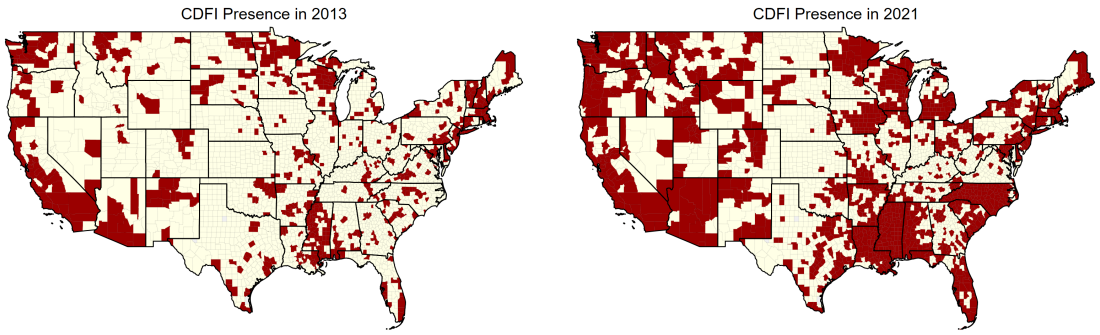


Figure D.1. CDFI Presence Across U.S. Counties
Counties are classified as having CDFI presence if at least one depository CDFI operates in the county or, for loan funds, if at least ten TLR loans are observed. See Section 2.2 for data sources.

Our county-level entry specifications follow a reduced-form design similar to studies that exploit geographic variation in intermediary presence to examine credit supply composition (e.g., Gopal and Schnabl, 2022). More broadly, this approach relates to work examining the determinants of local banking access and banking desert formation, which emphasizes the role of income, population density, and demographic composition in shaping branch presence (e.g., Langford, Thomas, and Feldman, 2024). In contrast to that literature, which studies traditional bank branch decisions, we focus on certification-induced expansion of mission-oriented intermediaries.

Table D.1 reports the results. Three findings emerge. First, both depository CDFIs and loan funds are more likely to enter counties with larger minority populations. Second, loan fund entry is positively associated with preexisting SBA lending, consistent with activity in markets with substantial demand for government-supported credit. Third, depository CDFIs are more likely to enter counties with higher poverty and unemployment rates.[7] Counties with lower deposit-based HHI are also more likely to gain CDFI presence.

D.3 Within-County Growth in Loan Fund Activity

We next examine the intensive margin of activity within counties that had loan fund presence in 2013. Using the TLR, we measure growth in CDFI loan fund business lending between

[7] We do not jointly include poverty, unemployment, and minority share because these variables are highly correlated.

Table D.1. Predicting County-Level CDFI Entry (2013–2021)
The dependent variable indicates CDFI presence in 2021 by institution type. The sample includes counties without CDFI presence in 2013. Control variables are measured in 2012. Heteroskedasticity-consistent standard errors are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	Depository CDFIs			Loan Fund CDFIs		
	(1)	(2)	(3)	(4)	(5)	(6)
SBA/CRA Ratio	-0.108	-0.077	-0.074	1.550**	1.697**	1.680**
	(0.467)	(0.473)	(0.469)	(0.657)	(0.687)	(0.683)
Fraction Non-white	0.126**			0.376***		
	(0.052)			(0.082)		
Fraction Poverty		0.232**			-0.076	
		(0.091)			(0.164)	
Unemployment Rate			0.525*			0.445
			(0.280)			(0.440)
Deposit-based HHI	-0.080***	-0.089***	-0.083***	-0.587***	-0.577***	-0.585***
	(0.018)	(0.018)	(0.017)	(0.037)	(0.037)	(0.038)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.126	0.125	0.125	0.357	0.350	0.350
N Counties in Sample	2,414	2,414	2,414	2,414	2,414	2,414
N Counties With CDFI Entry	120	120	120	752	752	752

2013 and 2021. We estimate:

$$\frac{\text{TLR Business Loans}_{c,2021} - \text{TLR Business Loans}_{c,2013}}{\text{CRA Loans}_{c,2012}} = \beta' X_{c,2012} + \nu_{state} + \epsilon_c, \qquad (7)$$

where the dependent variable measures growth in loan fund lending normalized by CRA-reported small business lending in 2012. The dependent variable is winsorized to limit the influence of outliers.

Table D.2 shows that loan fund lending grows more in counties with larger minority populations and greater reliance on SBA lending. Growth is also positively associated with poverty and unemployment rates. Deposit-based HHI does not predict within-county growth.

D.4 Loan-Level Comparison of CDFI and SBA Business Lending

We compare the characteristics and pricing of CDFI and SBA 7(a) business loans. Both programs target credit-constrained small businesses (Gong, Rosen, and Xie, 2025), but they differ in underwriting structure, federal guarantees, and servicing requirements.

Table D.2. Predicting County-Level CDFI Loan Fund Growth (2013–2021)
The dependent variable is the change in CDFI loan fund business lending relative to CRA-reported small business lending. The sample includes counties with loan fund presence in 2013. Heteroskedasticity-consistent standard errors are reported in parentheses. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

	(1)	(2)	(3)
SBA/CRA Ratio	0.379*	0.343*	0.355*
	(0.196)	(0.190)	(0.195)
Fraction Non-white	0.043***		
	(0.015)		
Fraction Poverty		0.099***	
		(0.035)	
Unemployment Rate			0.214**
			(0.089)
Deposit-based HHI	0.015	0.010	0.016
	(0.016)	(0.015)	(0.018)
State FE	Yes	Yes	Yes
R^2	0.595	0.593	0.588
N Counties in Sample	509	509	509

Table D.3 reports summary statistics for CDFI and SBA loans. A typical CDFI business loan has a median size of approximately $60,000, carries an interest rate of about 7 percent, and has a maturity of roughly four years. These characteristics are similar to SBA 7(a) "Express" loans, which also serve smaller and more credit-constrained borrowers. Standard SBA 7(a) loans, however, tend to be substantially larger.

To quantify differences in loan pricing, we estimate:

$$\text{InterestRate}_{l,c,k,t} = \beta' X_{l,t} + \nu_{c,t} + \nu_{k,t} + \epsilon_{l,c,k,t}, \tag{8}$$

where the dependent variable is the loan interest rate on loan l in county c, industry k, and year t. The vector $X_{l,t}$ includes loan-level characteristics, and we include county-year and industry-year fixed effects to absorb local credit conditions and industry-specific shocks.

Table D.4 reports the results. In the preferred specification, interest rates on CDFI business loans are approximately 1.7 percentage points higher than standard SBA 7(a) loans, while CDFI microbusiness loans carry rates roughly 4.3 percentage points higher. Thus, even after controlling for detailed loan features and granular geographic and industry conditions,

Table D.3. CDFI and SBA Loan-Level Summary Statistics
This table reports cross-sectional statistics for each variable. See Section 2.2 for data sources.

	Mean	SD	P5	P25	P50	P75	P95	N
CDFI - Bus Loans								
Amount (thd)	198.3	599.0	3.3	25.0	63.2	150.0	750.0	70,189
Real Amount (thd)	220.6	663.0	3.7	28.6	70.6	170.2	819.0	70,189
Maturity (year)	4.6	4.2	0.5	1.3	4.0	5.1	15.0	70,189
Interest Rate	7.2	2.8	3.5	5.3	6.8	8.5	12.0	70,189
Num of Jobs	12.1	42.0	0.0	1.0	2.5	8.0	46.0	70,189
CDFI - Microbusiness Loans								
Amount (thd)	7.0	9.0	1.5	2.2	3.5	7.0	27.0	271,856
Real Amount (thd)	7.7	10.1	1.6	2.4	3.9	7.6	30.6	271,856
Maturity (year)	1.2	1.3	0.5	0.5	0.5	1.5	5.0	271,856
Interest Rate	15.4	4.3	6.0	13.5	18.0	18.0	18.0	271,856
Num of Jobs	1.5	3.1	0.0	1.0	1.0	1.3	4.0	271,856
SBA Express 7a Loans								
Amount (thd)	75.9	89.3	10.0	25.0	50.0	100.0	257.3	262,227
Real Amount (thd)	87.1	104.1	10.8	26.5	54.0	110.6	310.7	262,227
Maturity (year)	6.8	2.8	2.5	5.0	7.0	7.0	10.0	262,227
Interest Rate	7.1	1.8	4.5	5.8	6.8	8.4	10.3	262,227
Num of Jobs	6.6	13.4	0.0	0.0	3.0	7.0	26.0	262,227
SBA Standard 7a Loans								
Amount (thd)	742.0	846.9	72.0	201.5	443.0	930.0	2500.0	209,997
Real Amount (thd)	844.2	959.8	80.9	233.9	503.3	1060.0	2849.3	209,997
Maturity (year)	14.3	7.3	5.2	10.0	10.0	25.0	25.0	209,997
Interest Rate	6.1	1.0	4.8	5.5	6.0	6.8	8.0	209,997
Num of Jobs	15.3	25.2	0.0	3.0	7.0	17.0	55.0	209,997

CDFI loans remain significantly more expensive. One potential explanation is that CDFI lending often bundles capital provision with non-financial services such as technical assistance and relationship-based underwriting, which may raise operating costs relative to guaranteed SBA lending and be reflected in loan pricing.

Table D.4. CDFI vs. SBA Loan Interest Rates

This table reports coefficient estimates from specification (8). The dependent variable is the interest rate on loan l in county c, industry k, and year t. See Section 2.2 for data sources. Heteroskedasticity-consistent standard errors are in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels.

	(1)	(2)	(3)	(4)
is CDFI Bus Loan	1.052***	0.106***	1.619***	1.739***
	(0.011)	(0.011)	(0.013)	(0.013)
is CDFI Mirco Bus Loan	9.321***	7.948***	4.215***	4.308***
	(0.009)	(0.012)	(0.015)	(0.015)
is SBA Express 7a	0.981***	0.178***	0.762***	0.781***
	(0.004)	(0.006)	(0.006)	(0.006)
Amount(mil)		-0.036***	-0.210***	-0.202***
		(0.006)	(0.006)	(0.006)
Maturity (year)		-0.093***	-0.031***	-0.032***
		(0.001)	(0.000)	(0.000)
Num of Jobs		-0.010***	-0.006***	-0.006***
		(0.000)	(0.000)	(0.000)
Industry FEs	No	No	Yes	No
County FEs	No	No	Yes	No
Year FEs	No	No	Yes	No
Industry-by-Year FEs	No	No	No	Yes
County-by-Year FEs	No	No	No	Yes
Adj. R^2	0.68	0.68	0.88	0.89
N	814,269	814,269	814,141	809,600

D.5 Summary

The evidence in this appendix documents substantial expansion of the CDFI sector across institutional, geographic, and lending dimensions. Geographic growth has been driven largely by loan funds, particularly in counties with larger minority populations and greater reliance on SBA lending. These entry patterns resemble documented determinants of banking access and desert formation in the traditional banking sector (e.g., Langford et al., 2024), although our analysis focuses on certification-induced expansion rather than branch closures. Loan-level comparisons indicate that CDFI loans carry higher interest rates than SBA loans even after conditioning on granular controls. Together, these results characterize the evolving footprint of the CDFI sector and its interaction with local credit conditions and alternative federal credit channels.